



Test Report Of ANSI/IES LM-79-19

APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Report Number..... : N02A22110665L00401

Client..... : HK Lighting Group

Address..... : 2151 Anchor Ct, Thousand Oaks, CA, USA

Test Model..... : ZXL38i-N

Brand Name..... : HK Lighting Group

Testing Laboratory..... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan
Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : Mar. 14, 2023

Date of test : Mar. 14, 2023

Date of report..... : Apr. 06, 2023

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li
GTG
Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1. Product Description for Equipment under Test(EUT)

Representative (Tested) Model:	ZXL38i-N
Manufacturer:	HK Lighting Group
Product Type:	AREA ACCENT LIGHT
Rated Voltage/Frequency:	120V AC, 60Hz
Rated Power:	52W
Rated luminous flux:	4300lm
Nominal CCT:	3000K
LED Manufacturer:	NICHIA
LED Model No.:	NICHIA 130

2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity between 10% and 65%.

Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric paramters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

5. Goniophotometer Test results

5.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

Electrical Measurement

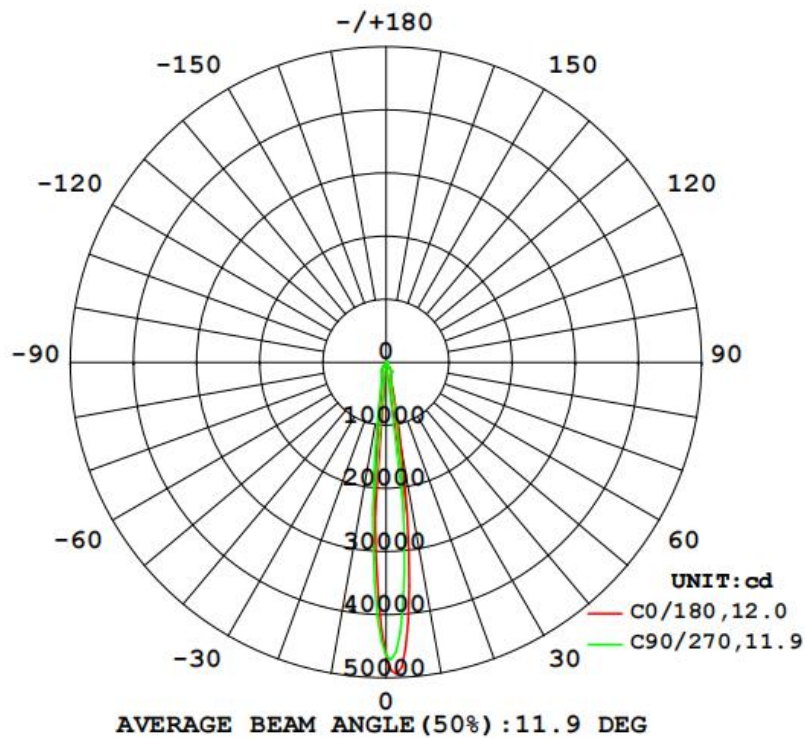
Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.1	60	0.4282	0.9827	50.52

Optical Measurement

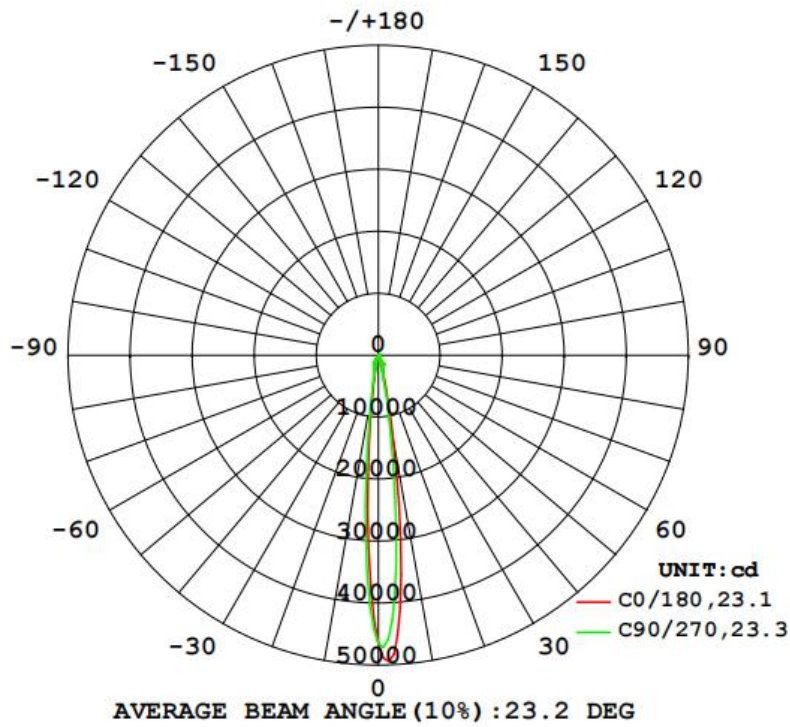
Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
4336.79	85.83	50134	0.15	0.18

5.2 Luminous Intensity Distribution

5.2.1 Beam Angle (50%) Mode:



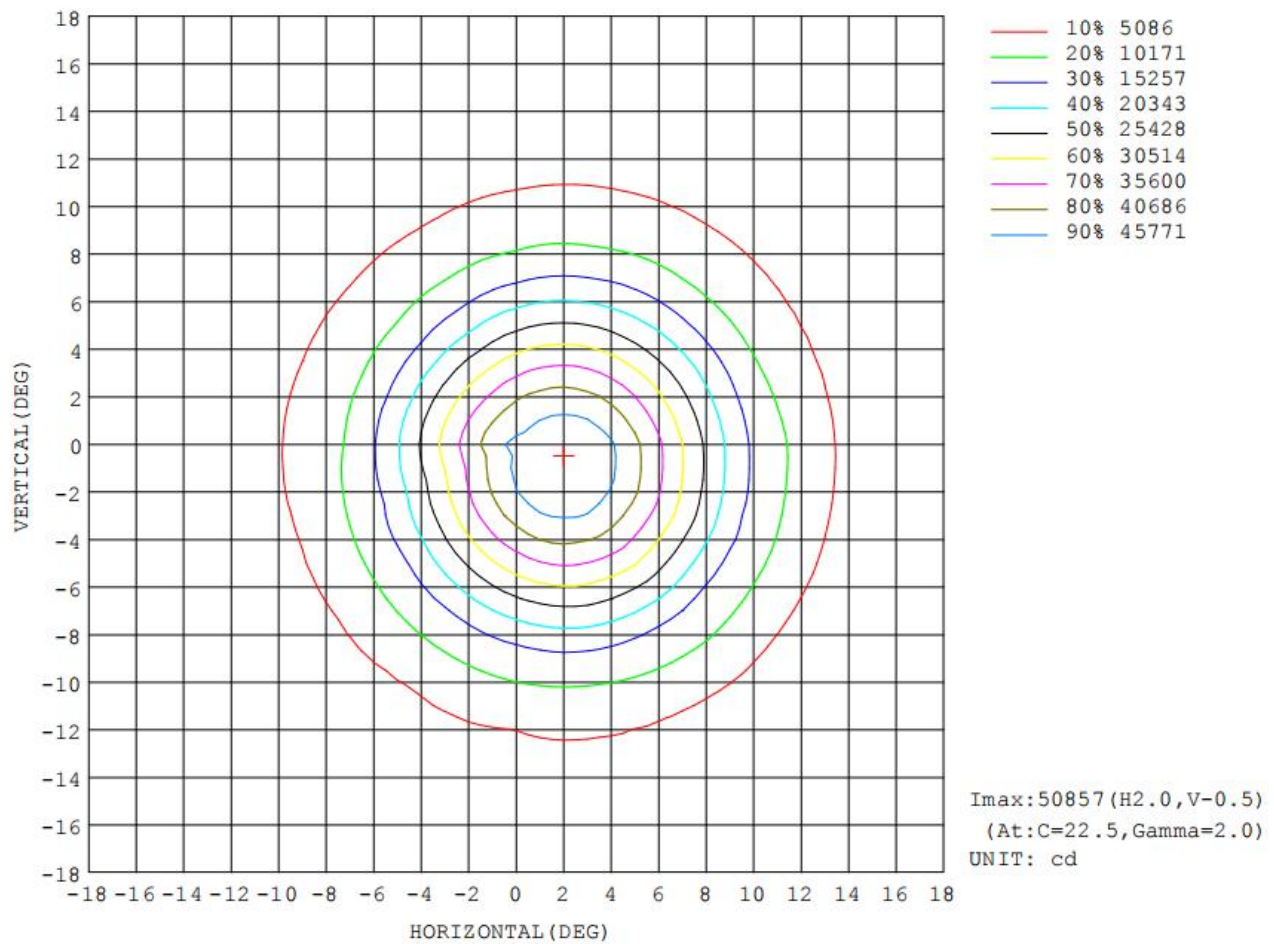
5.2.2 Beam Angle (10%) Mode:



5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	1394	1454	1025	574.7	477.1	462.9	592.9	979.4	0- 10	2099	2099	48.4, 48.4
20	219.9	225.2	213.2	210.0	201.0	203.9	211.4	217.3	10- 20	991.5	3090	71.3, 71.3
30	161.1	162.1	160.5	151.3	146.2	150.8	160.9	165.4	20- 30	837.5	3928	90.6, 90.6
40	6.701	7.160	6.423	5.755	6.616	7.139	6.409	6.474	30- 40	307.9	4236	97.7, 97.7
50	2.937	3.009	3.030	3.153	4.253	4.847	4.083	3.065	40- 50	34.95	4271	98.5, 98.5
60	2.209	2.235	2.211	2.418	3.105	3.558	3.119	2.386	50- 60	28.58	4299	99.1, 99.1
70	1.236	1.218	1.198	1.282	1.657	1.821	1.526	1.293	60- 70	19.51	4319	99.6, 99.6
80	0.4705	0.4358	0.3163	0.2068	0.2020	0.2374	0.3644	0.5046	70- 80	10.07	4329	99.8, 99.8
90	0.0079	0.0049	0.0038	0.0035	0.0043	0.0043	0.0046	0.0092	80- 90	0.9867	4330	99.8, 99.8
100	0.0034	0.0033	0.0036	0.0034	0.0045	0.0045	0.0045	0.0043	90-100	0.0435	4330	99.8, 99.8
110	0.0035	0.0034	0.0036	0.0033	0.0042	0.0042	0.0043	0.0041	100-110	0.0410	4330	99.8, 99.8
120	0.0078	0.0079	0.0090	0.0093	0.0085	0.0084	0.0078	0.0067	110-120	0.0469	4330	99.8, 99.8
130	0.0304	0.0304	0.0302	0.0329	0.0431	0.0422	0.0392	0.0386	120-130	0.1766	4330	99.8, 99.8
140	0.0868	0.0829	0.0920	0.1287	0.2093	0.2051	0.1579	0.1432	130-140	0.5409	4331	99.9, 99.9
150	0.3568	0.3300	0.2876	0.3610	0.7316	0.7131	0.5176	0.5978	140-150	1.881	4333	99.9, 99.9
160	0.3240	0.2835	0.2268	0.2561	0.8673	0.8455	0.7458	0.8129	150-160	2.502	4335	100, 100
170	0.2197	0.2118	0.2328	0.2366	0.5206	0.5244	0.5524	0.6249	160-170	1.378	4336	100, 100
180	0.2431	0.2327	0.2641	0.2742	0.2458	0.2354	0.2469	0.2718	170-180	0.3196	4337	100, 100
DEG	LUMINOUS INTENSITY: X10cd									UNIT: lm		

5.4 Isocandela Diagram



5.5 Luminous Distribution Intensity Data

Table--1

UNIT: X10cd

C (DEG) T (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648	4648			
5	4084	4254	4196	3853	3334	2841	2389	2062	1940	1867	1914	2081	2430	2842	3324	3821			
10	1394	1507	1454	1215	1025	797	575	508	477	457	463	501	593	748	979	1241			
15	356	368	369	340	313	287	279	265	260	256	262	266	281	298	328	349			
20	220	221	225	214	213	208	210	206	201	198	204	204	211	213	217	219			
25	182	182	185	179	181	179	181	179	176	174	179	177	183	185	186	187			
30	161	160	162	159	160	158	151	146	146	147	151	154	161	164	165	167			
35	36.9	34.1	32.3	26.4	19.6	13.7	18.4	16.1	10.5	11.1	11.3	11.5	32.4	36.6	41.3	55.0			
40	6.70	6.33	7.16	6.70	6.42	5.88	5.75	6.21	6.62	6.80	7.14	6.52	6.41	6.22	6.47	7.03			
45	4.06	3.96	4.18	3.91	3.92	3.66	3.87	4.03	4.43	4.68	4.91	4.62	4.23	4.04	4.08	4.23			
50	2.94	2.94	3.01	2.94	3.03	2.94	3.15	3.71	4.25	4.63	4.85	4.55	4.08	3.52	3.06	3.03			
55	2.48	2.30	2.53	2.54	2.57	2.59	2.78	3.55	4.12	4.52	4.77	4.54	3.96	3.34	2.77	2.66			
60	2.21	2.13	2.23	2.19	2.21	2.24	2.42	2.83	3.11	3.32	3.56	3.49	3.12	2.78	2.39	2.30			
65	1.86	1.85	1.87	1.82	1.83	1.78	1.78	1.91	2.01	2.08	2.18	2.14	2.04	2.02	1.93	1.87			
70	1.24	1.18	1.22	1.15	1.20	1.22	1.28	1.50	1.66	1.75	1.82	1.67	1.53	1.42	1.29	1.22			
75	0.82	0.77	0.82	0.79	0.83	0.87	0.93	1.08	1.19	1.20	1.33	1.29	1.15	1.08	0.95	0.87			
80	0.47	0.44	0.44	0.37	0.32	0.24	0.21	0.15	0.20	0.19	0.24	0.28	0.36	0.45	0.50	0.49			
85	0.09	0.08	0.09	0.08	0.08	0.07	0.07	0.06	0.07	0.06	0.07	0.07	0.08	0.07	0.09	0.09			
90	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01			
125	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02			
130	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04			
135	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07			
140	0.09	0.08	0.08	0.09	0.09	0.11	0.13	0.14	0.21	0.21	0.21	0.18	0.16	0.15	0.14	0.14			
145	0.20	0.19	0.19	0.17	0.22	0.23	0.29	0.32	0.47	0.48	0.47	0.38	0.37	0.32	0.33	0.31			
150	0.36	0.34	0.33	0.25	0.29	0.28	0.36	0.38	0.73	0.73	0.71	0.58	0.52	0.50	0.60	0.59			
155	0.43	0.42	0.39	0.30	0.27	0.28	0.33	0.33	0.88	0.87	0.83	0.76	0.62	0.62	0.76	0.84			
160	0.32	0.31	0.28	0.25	0.23	0.23	0.26	0.26	0.87	0.86	0.85	0.80	0.75	0.74	0.81	0.89			
165	0.24	0.24	0.24	0.22	0.23	0.24	0.25	0.25	0.72	0.72	0.74	0.72	0.67	0.68	0.76	0.83			
170	0.22	0.22	0.21	0.22	0.23	0.24	0.24	0.23	0.52	0.52	0.52	0.53	0.55	0.58	0.62	0.67			
175	0.23	0.23	0.23	0.23	0.24	0.25	0.25	0.25	0.34	0.35	0.34	0.33	0.37	0.40	0.43	0.45			
180	0.24	0.24	0.23	0.24	0.26	0.27	0.27	0.27	0.25	0.25	0.24	0.23	0.25	0.26	0.27	0.28			

6. Photo of sample

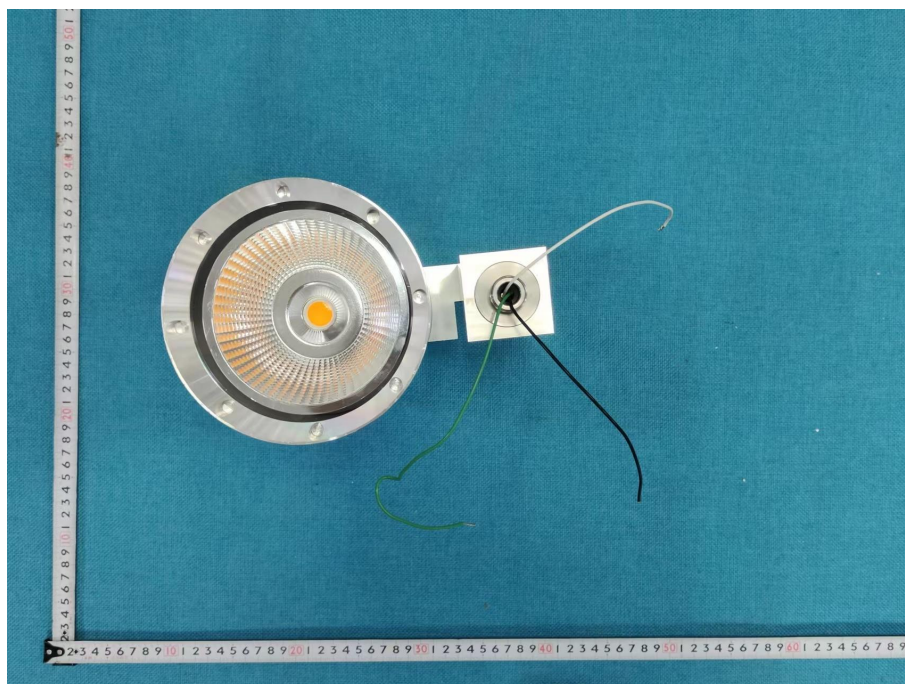


Figure 1 Overview

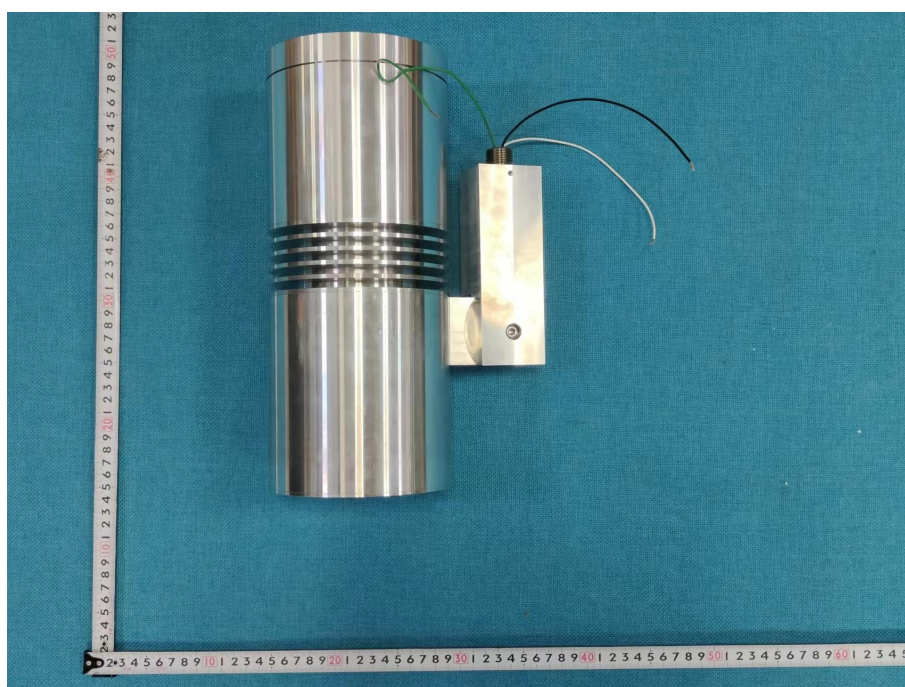


Figure 2 Overview

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